

REMARKS

This is in response to the Office Action dated June 27, 2002 (a Petition for a Two-Month Extension of Time is enclosed, in which the Examiner:

- (a) objected to the drawings;
 - (b) objected to parts of the specification;
 - (c) objected to certain aspects of the claim;
 - (d) rejected claims 1-16 under 35 U.S.C. § 112;
 - (e) rejected claims 1, 2, 9 and 10 as anticipated by Frank (U.S. Patent No. 3,833,051);
- and
- (f) rejected claims 3, 6, 11 and 14 as obvious over Frank (U.S. Patent No. 3,833,051) in view of Nickenson (U.S. 4,117,885).

Based on the above amendments and following remarks, the application is deemed to be in condition for allowance and action toward that end is respectfully requested.

I. THE OBJECTION TO THE DRAWINGS SHOULD BE WITHDRAWN

The drawings were objected to because they include the following reference sign(s) not mentioned in the description: "St.d.T." of FIG. 1; "9a", "10a" of FIG. 4; and "9b", "10b" of FIG. 6. Submitted herewith, along with a Letter to Official Draftsperson, are Figures 1 and 6, in which such references have been proposed to be deleted.

Fig. 1 has now also been proposed to be designated by the legend -- Prior Art--.

Accordingly, the objection to the drawings should be withdrawn.

II. THE OBJECTION TO THE DISCLOSURE SHOULD BE WITHDRAWN

On page 4, line 15 -- or tube bundles -- has been inserted after “packets” for consistency in terminology. Accordingly, the objection to the specification should be withdrawn.

III. THE OBJECTION TO THE ABSTRACT SHOULD BE WITHDRAWN

The Abstract is now in the form of a single paragraph.

“Drawing to be published in this context: Fig. 2” has been omitted.

The use of legal phraseology has also been deleted.

In view of the above, the objection to the Abstract should be withdrawn.

IV. THE CLAIM OBJECTIONS SHOULD BE WITHDRAWN

Claims 1, 8, 9 and 16 had minor objections which have been addressed.

In claim 1, -- an -- has been inserted before “exothermic” (line 4). Likewise, claim 9 (line 5). Furthermore, -- the -- has been inserted before “water” (line 6) and -- distributed -- has been inserted before “via” (line 6) for consistency (refer to line 7, “the steam removed via the ring pipe”). Likewise, claim 9 (line 7).

The remaining minor objections to the claim have been fixed by amendment.

In view of the above, the objections to the claims should be withdrawn.

IV. THE REJECTION UNDER § 112 SHOULD BE WITHDRAWN

Claims 1-16 were rejected as indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. First of all, applicant has change the language “mounted as a collector or chamber” (lines 7-8) found by the Examiner to be confusing to -- mounted as a distribution or collecting chamber -- for consistency in claim terminology. The “in particular” (line 5) language no longer exists in claims 1 and 9.

The Examiner also had some problems with the language “tube packets come into contact with water via the ring pipe” (lines 6-7) and “the steam removed via the ring pipe” (line 7). However, as pointed out at page 5 of the specification:

“Here the tube bundles 2 and in two ring collectors 9 and 10 which are mounted in the interior wall and are, for example, rectangular or trapezoidal, the heat exchange medium being introduced via the ring collector or distributor 9 and the steam being removed, for example, via the collector 10. For this purpose, only two transverse connecting pieces 11 and 12 pass through the reactor wall 4 in the example shown in Figure 2. The feed pipes 7 and the return pipes 8 for the steam pass only through the inner wall of the collectors 9 and 10 respectively.

The antecedent problems re “the oxychlorination” (line 1), “the fluidized bed” (line 3) and “the reactor wall” (line 8) have been fixed by amendment and no longer lack proper positive antecedent basis.

The “water/steam” (line 5) in line 5 and claim 9 is clarified by the specification excerpt copied above.

The antecedents re: “the distribution or collecting chamber” in claims 2, 3, 4, 10 and have been fixed by the amendments to claims 1 and 9.

Concerning claim 4, what applicant means is that the distribution or collecting chamber may be mounted on or outside of the reactor wall.

Claim 5 has been amended to address other § 1 & 2 problems pointed out by the Examiner.

The confusing language of claim 7 has been fixed by amendment.

Concerning claim 8, as far as the relationship between “pipelines” and the other elements of the apparatus, is this is apparent based on the recited extract from the specification above. “The pipelines” (line 2) and “the [various] tube packets” (line 4) now have proper positive antecedent basis. The various other objections re: claim 8 have now been fixed by amendment.

The various objections re: claim 9 have now been fixed by amendment.

The objections re: claim 13 re: the chamber is overcome with the amendments to claim 9.

In view of the same, the § 112 rejections should be withdrawn.

VI. THE REJECTION OVER THE REFERENCES SHOULD BE WITHDRAWN

As explained, claims 1, 2, 9 and 10 were found to be anticipated by the Frank patents and claims 3, 6, 11 and 14 were found to be obvious over Frank in view of Nickerson. As demonstrated herein however, this is not so. Frank or Nickerson, even combined, do not disclose, teach or otherwise suggest the COMBINATION of A fluidized-bed reactor for oxychlorination of ethylene, oxygen and HCl which includes a heat exchanger with tube packets

in a fluidized bed for releasing heat from an exothermic reaction to a heat-transfer medium in the tube packets to water/steam and a ring pipe mounted as a distribution or collection chamber on the reactor wall so that the tube packets come into contact with the water distributed via the ring pipe and the steam removed via the ring pipe. These features are EXPLICITLY recited in claims 1 and 9; accordingly Frank and Nickerson, alone or in combination, do not disclose, teach or otherwise suggest the combination of features in claims 1 and 9 and cannot be said to anticipate or render them obvious.

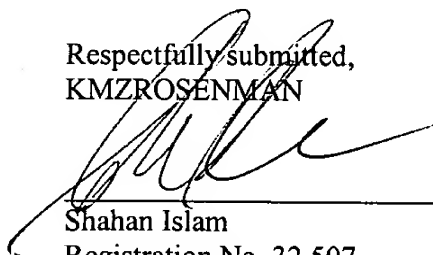
Each remaining claim is dependent, directly or indirectly on claims 1 on 9 and are also allowable for at least the same reasons.

CONCLUSION

In view of the foregoing, it is respectfully submitted that the application is in condition for allowance and allowance of the application is respectfully requested.

Should the Examiner require or consider it advisable that the specification, claims and/or drawings be further amended or corrected in formal respects in order to place the case in condition for final allowance, then it is respectfully requested that such amendment or correction be carried out by Examiner's Amendment and the case passed to issue. Alternatively, should the Examiner feel that a personal discussion might be helpful in advancing this case to allowance, the Examiner is invited to telephone the undersigned.

Respectfully submitted,
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APPENDIX – SPECIFICATION, ABSTRACT
AND CLAIMS IN “MARKED-UP” FORM

IN THE SPECIFICATION

Please amend the paragraph at page 4 lines 13-22 as shown in the Appendix in “marked up” form and in clean form below:

Fig. 1 shows a solution according to the prior art. Here, the reactor denotes in general by 1 has a large number of tube bundles 2 as heat exchanger, comprising ring pipes 5 and 6, arranged on a console 3 outside the reactor wall 4, pipe 5 and withdrawn steam in the ring pipe 6. It is evident, however, that the feed and discharge pipes 7 and 8, respectively, must be led individually through the reactor wall, and the associated computational, design and manufacturing effort is clear.

IN THE CLAIMS

Please amend claims 1, 5, 7-10 and 16 as shown below:

1. (Amended) A fluidized-bed reactor for [the] oxychlorination of ethylene, oxygen and HCl , said reactor comprising:

a heat exchanger, including a plurality of tube packets, in [the] a fluidized bed for releasing heat evolved from an exothermic reaction to a heat-transfer medium in the tube packets, [in particular] to water/steam; and

a ring pipe, wherein the tube packets come into contact with the water distributed via the ring pipe and the steam removed via the ring pipe, wherein the ring pipe is mounted as a [collector] distribution or collection chamber on [the reactor] a wall of the reactor.

2. (Amended) A fluidized-bed reactor as claimed in claim 1, wherein the distribution or collecting chamber is mounted internally on the reactor wall.

3. (Amended) The fluidized-bed reactor as claimed in claim 1, wherein the distribution or collecting chamber is mounted externally on the reactor wall.

4. (Amended) The fluidized-bed reactor as claimed in claim 1, wherein the distribution or collecting chamber is mounted both internally and externally on the reactor wall.

5. (Amended) The fluidized-bed reactor as claimed in claim 1, wherein the [chamber] reactor is [essentially] substantially rectangular in cross-section.

6. (Amended) The fluidized-bed reactor as claimed in claim 1, wherein the chamber is essentially semicircular in cross-section.

7. (Amended) The fluidized-bed reactor as claimed in claim 1, wherein the chamber is essentially circular in cross-section[, wherein one-half of the circular shape is coordinated with the interior of the reactor and the other half with the exterior of the reactor].

8. (Amended) The fluidized-bed reactor as claimed in claim 1, further comprising holes for connecting the [pipelines] pipes said holes [being in the form of throttle holes] for defining a desired pressure loss and hence for ensuring uniform flows over the [various] tube packets.

9. A process for the oxychlorination of ethylene, oxygen and HCl, said reactor providing the steps of:

providing a fluidized bed reactor;

providing a heat exchanger, including a plurality of tube packets, in the fluidized bed for releasing heat evolved from an exothermic reaction to a heat-transfer medium in the tube packets, [in particular] to water/steam; and

causing the tube packets to come into contact with the water distributed via a ring pipe[;]
and steam via [a] the ring pipe, wherein the ring pipe is mounted as [a collector or] collection or distribution chamber on [the reactor] a wall.

10. The process as claimed in claim 9, wherein the distribution or collecting chamber [9, 10] is mounted internally on the reactor wall.

11. The process as claimed in claim 9, wherein the distribution or collecting chamber is mounted externally on the reactor wall.

12. The process as claimed in claim 9, wherein the distribution or collecting chamber is mounted both internally and externally on the reactor wall.

13. The process as claimed in claim 9, wherein the chamber is essentially rectangular in cross-section.

14. The process as claimed in claim 9, wherein the chamber is essentially semicircular in cross-section.

15. The process as claimed in claim 9, wherein the chamber is essentially circular in cross-section, wherein one half of the circular shape is coordinated with the interior of the reactor and the other half with the exterior of the reactor.

16. (Amended) The process as claimed in claim 9, further providing[,] holes for connecting the pipelines said holes being in the form of throttle holes for defining a desired pressure loss and hence for ensuring uniform flows over the various tube packets.

IN THE ABSTRACT

The Abstract has been amended as shown below:

[By means of a] A fluidized-bed reactor for the oxychlorination of ethylene, oxygen and HCL, [comprising] comprises a heat exchanger, [consisting of] having [a plurality of] tube packets [,] in the fluidized-bed for releasing the heat evolved [owing to] from exothermic reaction to a heat-transfer medium in the tube packets, in particular to water/steam[, the]. The tube packets [coming] come into contact with water via a ring pipe and the steam [is] being removed via a ring pipe [, it is intended] to provide an economical solution with which [the] expensive drilled passages are avoided, [in particular] the calculation for ring pipes is facilitated and a large number of wall passages is dispensed with. This is achieved by the ring pipe being mounted as a collector or chamber [(9, 10] directly on the reactor wall [(4)].

[Drawing to be published in this context: Fig. 2.]

